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February 26, 1996

VIA MESSENGER

Mr. William F. Caton
Acting Secretary
Federal Communications Commission
1919 M Street, NW
Washington, DC 20554

Re: **CC Docket No. 92-297**
Ex Parte Presentation

Dear Mr. Caton:

The enclosed documents were provided today to Ms. Amy Lesch of the FCC's Office of Plans and Policy on a matter related to the pending proceeding in CC Docket No. 92-297. An original and two copies of this letter are submitted.

Respectfully submitted,

Paul E. Misener
Counsel for Texas Instruments, Inc.

Enclosures

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HAND DELIVERY

Amy C. Lesch
Industry Analyst
Office of Plans and Policy
Federal Communications Commission
1919 M Street, NW
Room 822
Washington, DC 20554

re: Testimony of Gene Robinson for En Banc Hearing

Dear Amy:

Enclosed are 10 copies each of Gene Robinson's written testimony for the upcoming en banc hearing, a brief summary of his testimony, Mr. Robinson's biographical statement, and a description of Texas Instruments, Inc. These materials were faxed to you last week.

Please call me at 202-282-7506 if you have any questions.

Sincerely yours,

Paul E. Misener
Counsel for Texas Instruments, Inc.

Enclosures

Testimony of

GENE ROBINSON
TEXAS INSTRUMENTS

ON

TECHNOLOGY TRENDS AND THE DEMAND FOR SPECTRUM

BEFORE THE FEDERAL COMMUNICATIONS COMMISSION
EN BANC HEARING ON SPECTRUM POLICY
DA Docket No. 96-190

March 5, 1996

On behalf of Texas Instruments, Inc. ("Texas Instruments") I have been privileged to serve on a number of FCC advisory groups and a negotiated rule making proceeding over the past several years. During these activities, I have participated in development of standards that make use of new technology capabilities and studies which considered the possibilities of sharing opportunities.

I would like to offer my personal views of how new technologies and applications will affect the demand for spectrum in the future and, how we might encourage sharing and increased spectrum efficiency through appropriate application of technology.

I. TECHNOLOGY TRENDS

The telephone, a major advancement in communication, was soon followed by wireless technology developments which continue today with the race for higher frequency and wider bandwidth applications. The digital revolution brought about by low cost semiconductor technology has created the information age which depends on very wide bandwidths for efficient communication. The technology trends of the 90's have continued to be accelerated with the development of the digital network society. In the future, most information will be digital, with high speed processing and transmission accomplished on wideband networks which in turn will transform the daily lifestyle of society.

Technology Developments

Wireless communication devices such as cellular phones and pagers have changed the daily lifestyle of many Americans. The development of cable and direct-broadcast satellites now brings hundreds of video channels into today's homes. New PCS and MMDS applications continue to use existing technologies. The new satellite and terrestrial applications of tomorrow, such as Iridium and Local Multipoint Distribution Service

(LMDS) at 28 GHz, continues to foster new microwave component developments and means to quickly provide new wideband network connection techniques. The capability of offering return channel information paths on LMDS will allow information from a consumer to flow back to the network to provide new convenient capabilities to the user.

The development work being done in the research laboratories at 44 GHz (43.5-44.5 GHz) in support of the MilSatCom MilStar program and other research being conducted at 75 GHz and 94 GHz will lead to the next generation of components to support civil commercial spectrum applications for the digital society of tomorrow.

Texas Instruments continues to make key advancements in microwave technologies relevant to telecommunications. The company's strengths are in the research, development and manufacture of gallium arsenide (GaAs) monolithic microwave integrated circuits (MMICs) and the application of this technology to systems. These technical advancements include:

Advanced Microwave GaAs Devices
Microwave Power Amplifiers
Low Noise Amplifiers
Microwave Down-Converters
Microwave Oscillators
Microwave Device Fabrication
Microwave Component Manufacture

Specific microwave development efforts at Texas Instruments have included:

LABCOM Jammer	20-40 GHz
TI Research/Development	28 GHz
NASA Lewis Ka Band	32 GHz
Wright Labs	35 GHz
NWC, HBT	35 GHz
Wright Labs	35-44 GHz
SDI V-band	44 GHz and 60 GHz
NOSC	60 GHz and 94 GHz

These and other programs will support new telecommunications and other applications in the future.

Future Applications

Spectrum wireless networks implemented at 28 GHz, 40 GHz, and at higher frequencies will allow new services and applications to be brought to the consumer more

rapidly at lower cost in the future. These applications, fostered and supported by new spectrum allocations, will provide two-way local area networks that make use of advanced modulation and a new video digital compression technology for spectrum efficient digital video and other services. Spectrum allocations in the 60 GHz and 90 GHz regions could support local area networks in the homes and businesses of the future. These short range wireless networks will promote new devices that will allow us to conveniently connect to the wired or wireless networks while located anywhere in the home or business.

II. SPECTRUM DEMANDS

Spectrum demands will continue to increase as the information age develops.

Bandwidth

Bandwidth determines the speed at which information can be transmitted. As video sources and digital data bases grow, consumers will demand faster communication and data transfer media that provide the flexibility offered by wireless networks. This demand with a large consumer base will require very wide blocks of spectrum.

Sharing

The large number of applications that will be required in the will place major constraints on the future use of spectrum. National and public benefits will require new technology to be developed to allow better sharing of the limited spectrum resources available. Studies which analyze and promote spectrum sharing will need to be fostered by the regulatory agencies. Cooperation between the commercial interest and government agencies will be required to prioritize and develop spectrum policy that maximizes sharing, promotes investment in enabling spectrum sharing technologies, and generates maximum public benefit.

III. CONCLUSIONS

A national spectrum policy for commercial and government use of the spectrum at 40 GHz and above that supports the wideband spectrum needs of the future should be developed. This national spectrum plan would serve to promote efficient use of the spectrum, new technology, and the investment necessary to provide the capabilities needed to provide the future benefits to the public that wideband high speed wireless information systems promise.

Summary

Written Testimony of

Gene Robinson
Senior Fellow
Texas Instruments, Inc.

Before the FCC En Banc Hearing on Spectrum Policy

March 5, 1996

Communications technologies and systems using spectrum above 30 GHz have been developed by companies including Texas Instruments, Inc. These advancements, proven largely in the context of national defense projects, will help meet the ever-growing consumer demand for communications capacity. Efficient spectrum use and new technology developments and investment would be promoted by adoption of a national spectrum plan for frequencies above 40 GHz.

Gene Robinson

Senior Fellow

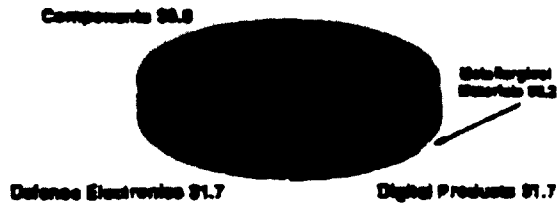
Gene Robinson, Technical Director of Texas Instrument's Communications and Electronic Systems Division, oversees the development of microwave and millimeter wave technologies. Intimately familiar with the capabilities and limitations of radio devices and equipment for use at frequencies above 20 GHz all the way to nearly 200 GHz, Mr. Robinson also has extensive experience with the design and development of GPS and other navigation technology. His knowledge and concerns about spectrum and FCC processes date back to his youth, when he worked in the family's AM radio station operations.

TEXAS INSTRUMENTS

Overview

Texas Instruments Incorporated, headquartered in Dallas, Texas, is a high-technology company with sales or manufacturing operations in more than 30 countries. TI products and services include semiconductors; defense electronics systems; software productivity tools; printers, notebook computers and consumer electronics products; custom engineering and manufacturing services; electrical controls; and metallurgical materials.

1994 TI Revenues by Segment



Total $10.3 *

Research and Development	$689 million in 1994; About 800 million in 1995
Capital Expenditures	$1076 million in 1994; About 1.3 billion in 1995
Fortune 500 Ranking	58; Based on 1993 ranking

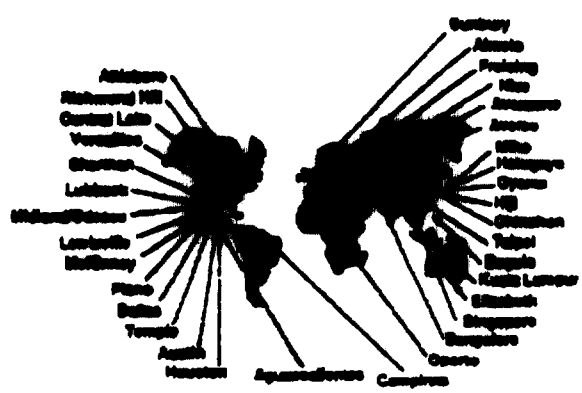
Employment

More than 56,000 worldwide

This includes approximately:

- 33,500 in the United States
  - 29,000 in Texas
  - 23,000 in North Texas
  - 20,500 in Dallas area
- 11,000 in Asia/Pacific region
- 5,000 in Japan
- 5,500 in Europe
- 965 in Latin America

TI WORLDWIDE PLANT LOCATIONS



Facilities

TI has facilities or sales offices in approximately 159 locations in 33 countries worldwide. This includes 43 manufacturing plants (39 are wholly owned by TI, 4 are joint ventures) in 17 countries.

04/95